A Master Plan to Meet California's RPS Needs for Peaking Power

An Update of Work in Progress

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A Look Back: the CSP California Success Story in the 1980s

Back to the roots:

- The high oil prices in the early 1980s created a boost for renewable technologies
- CSP was capable to respond with firm, peaking power

The Successful Framework in the 1980s:

- Favorable FERC Regulation
- Investment Tax Credits (Federal & State)
- Attractive time-of-use tariffs:
  - 14 US cts. / kWhe on the average
  - up to 36 cts. for summer on-peak

The Result:

- 9 plants with accumulated 354 MWe solar capacity built in only 7 years
- 1.2 billion US $ invested; all private capital (30-40% equity)
- 12 TWhe solar power produced;
- Electricity sales: $ 2 billion kWhe

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Concentrating Peaking Solar Power "Comeback"

- The global solar trough "industry" is moving again at a significant scale after a 15 year hiatus.
- Introduction of thermal storage provides important operational flexibility
- Levelized electricity costs for parabolic trough projects in construction and development range, today, from $ 170 to $ 200/MWh

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CSP Price Trends

- With full 30% ITC available, costs for "next" projects in SW US will be $130 - $150/MWh
- Costs in the $100 - $120/MWh are expected by the end of this decade for large scale projects
- R&D and other "efficiencies" will drop costs to below $100/MWh

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CSP Benefits

CSP Offers:

- Firm, dispatchable peaking power – significantly reducing dependency on gas peaking plants
- Reliable technology, reducing fossil fuels up to 100% through use of thermal storages w/o need of any back-up capacity in the electric system
- Utility-scale and proven technology, perfectly fitting into the utility's thermal power expansion plans

Most importantly:

- Solar field investments (50-65% of total investment) require more labour - intensive solar field construction & erection work
- Thus, more jobs are created than building conventional power stations

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The Market for Solar in the US Southwest

- **California**
  - 500 MW by 2010
  - 8,000 MW by 2020 – most of that peaking demand
- **Arizona:** 2,000 MW
- **Nevada**: 1,500 MW
- **New Mexico** and – mostly –
  West Texas: 1,000 + MW
- **Colorado:** 500 MW after 2010

Forecast of CPUC in fall 05:
10,000 MW of CSP by 2020

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California CSP Masterplan

= > Build 10 GW CSP peaking power by 2020

1,000 MW / yr from 2010 on

- - 2/3: Mojave Desert
- - 1/3 Imperial Valley

Labor effects:

- About 2,000 local construction jobs
- in CA for 12 years
- 1,000 manufacturing jobs in CA
- 2,000 permanent operating jobs

=> Improve/strengthen electrical grid system

- 3 GW west of CA 395 => Antelope/Mojave sub (with link to Midway – central – northern CA grid)
- 3 GW east of 395 => **(Kramer/Lugo substations)**

Ease environmental permit procedures

- Secure property tax exemption
- Apply resonable land mitigation requirements

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